

AD-A093 110 ARMY COMMAND AND GENERAL STAFF COLL FORT LEAVENWORTH KS F/G 15/7  
BATTLEFIELD AIR INTERDICTION BY THE LUFTWAFFE AT THE BATTLE OF --ETC(I)  
JUN 80 W J DALECKY

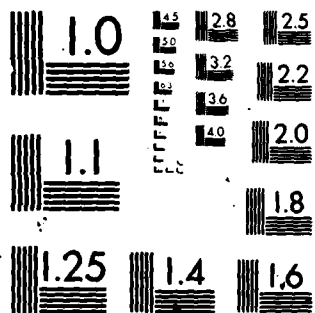
ARMY COMMAND AND GENERAL STAFF COLL FORT LEAVENWORTH KS F/G 15/7  
BATTLEFIELD AIR INTERDICTION BY THE LUFTWAFFE AT THE BATTLE OF --ETC(1  
JUN 80 W J DALECKY

SBIE-AD-E750 043

NL

2017-12-15

END  
DATE  
FILMED  
2-84  
DTIC



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

② LEVEL III

BATTLEFIELD AIR INTERDICTION BY THE  
LUFTWAFFE AT THE BATTLE OF KURSK - 1943

A thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by

WILLIAM J. DALECKY, MAJ, USAF  
B.A., United States Air Force Academy, 1969  
M.S., University of California at Los Angeles, 1970  
M.S., Troy State University, 1979

Fort Leavenworth, Kansas  
1980

DISTRIBUTION STATEMENT A

Approved for public release  
Distribution Unlimited

DTIC  
ELECTE

DEC 22 1980

B

AD A093110

DDC FILE COPY

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. <b>AD 4093 110</b>	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle)  <b>Battlefield Air Interdiction by the Luftwaffe at the Battle of Kursk - 1943</b>		5. TYPE OF REPORT & PERIOD COVERED  <b>6 June 1980</b>
7. AUTHOR(s)  <b>Dalecky, William J., Maj, USAF</b>		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS  <b>Stufent at the U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027</b>		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS  <b>U.S. Army Command and General Staff College ATTN: ATZLSW-DC-MS</b>		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE <b>6 June 80</b>
		13. NUMBER OF PAGES
		15. SECURITY CLASS. (of this report)  <b>Unclassified</b>
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)  <b>Approved for public release; distribution unlimited.</b>		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  <b>Approved for public release; distribution unlimited.</b>		
18. SUPPLEMENTARY NOTES  <b>Master of Military Art and Science (MMAS) thesis reprepared at CGSC in partial fulfillment of the Masters Program requirements, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027.</b>		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)  <b>Battlefield Air Interdiction Close Air Support History of the Luftwaffe (German Air Force) Battle of Kursk Air Force Doctrine</b>		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  <b>See reverse.</b>		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

This study attempts to show the misapplication of tactical airpower by the Luftwaffe in support of German ground forces during the Battle of Kursk in July 1943. The analysis is based on the investigation of historical references and provides lessons learned which might be applied in future conflicts.

The study shows that the Luftwaffe concentrated its efforts at Kursk on Close Air Support and neglected Battlefield Air Interdiction. This was primarily because Close Air Support had proven itself so successful in German experience prior to Kursk. However, the failure of the Luftwaffe to interdict Russian reinforcements at Kursk proved to be critical and contributed to the German defeat.

Air planners must realize that a correct balance between Close Air Support and Battlefield Air Interdiction is essential to the efficient use of airpower during any tactical application in support of ground forces. Neither Close Air Support nor Battlefield Air Interdiction should gain primacy in doctrine, rather, a mix of the two should be applied on a situational basis.

**Battlefield Air Interdiction by the Luftwaffe at the Battle of Kursk- 1943**

**William J. Dalecky, Maj, USAF  
U.S. Army Command and General Staff College  
Fort Leavenworth, Kansas 66027**

**6 June 1980**

**(Unclassified) Approved for public release; distribution unlimited.**

**A Master of Military Art and Science thesis presented to the faculty of the  
U.S. Army Command and General Staff College, Fort Leavenworth, Kansas 66027**

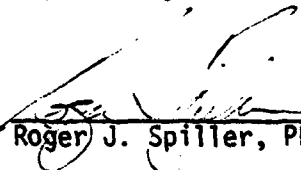
MASTER OF MILITARY ART AND SCIENCE

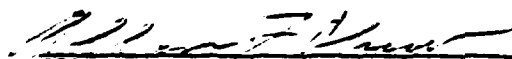
THESIS APPROVAL PAGE

Name of candidate William J. Dalecky

Title of thesis Battlefield Air Interdiction by the Luftwaffe  
at the Battle of Kursk -1943

Approved by:

 \_\_\_\_\_, Thesis Committee Chairman  
Roger J. Spiller, PhD

 \_\_\_\_\_, Member, Graduate Faculty  
Allen F. Chew, PhD

 \_\_\_\_\_, Member, Graduate Faculty  
Edward J. Drea, PhD

Accepted this 11th day of June 1980 by Philip J. Brooks  
Director, Graduate Degree Programs.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (Reference to this study should include the foregoing statement.)

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/ _____	
Availability Codes	
Dist	Avail and/or Special
<b>A</b>	

**BATTLEFIELD AIR INTERDICTION BY THE LUFTWAFFE AT THE BATTLE OF KURSK - 1943, by Major William J. Dalecky, USAF, 62 pages.**

This study attempts to show the misapplication of tactical airpower by the Luftwaffe in support of German ground forces during the Battle of Kursk in July 1943. The analysis is based on an investigation of historical references and provides lessons learned which might be applied in future conflicts.

The study shows that the Luftwaffe concentrated its efforts at Kursk on Close Air Support and neglected Battlefield Air Interdiction. This was primarily because Close Air Support had proven itself so successful in German experience prior to Kursk. However, the failure of the Luftwaffe to interdict Russian reinforcements at Kursk proved to be critical and contributed to the German defeat.

Air planners must realize that a correct balance between Close Air Support and Battlefield Air Interdiction is essential to the efficient use of airpower during any tactical application in support of ground forces. Neither Close Air Support nor Battlefield Air Interdiction should gain primacy in doctrine, rather, a mix of the two should be applied on a situational basis.



The author would like to express his sincere gratitude to Dr. Roger J. Spiller and the other members of the thesis committee for their genuine interest and guidance in this effort.

The author's wife, Elisabeth, was indispensable for her encouragement and patience throughout a sometimes frustrating process. To her go special thanks.

## CONTENTS

ABSTRACT . . . . .	iii
ACKNOWLEDGMENTS . . . . .	iv
CHAPTER I. INTRODUCTION . . . . .	1
Current doctrine. Applicability of historical lessons to the situation in central Europe.	
CHAPTER II. BACKGROUND DEVELOPMENT AND EVOLUTION OF THE LUFTWAFFE FROM WORLD WAR I UNTIL 1943 . . . . .	7
Experiences in World War I. Spanish Civil War. Early campaigns in Poland, France and Russia. Doctrine and equipment developments.	
CHAPTER III. THE BATTLE OF KURSK . . . . .	24
Preparation for the battle. Luftwaffe air order of battle. Conduct of the battle.	
CHAPTER IV. ANALYSIS OF THE LUFTWAFFE'S EFFORT . . . . .	39
Limitations of equipment. Soviet air defense. Requirement for Close Air Support.	
CHAPTER V. SUMMARY AND CONCLUSIONS . . . . .	48
Misapplication of Luftwaffe airpower at Kursk. Potential for modern misapplication.	

## CHAPTER I

### INTRODUCTION

Modern mechanized warfare is characterized by a high level of mobility and lethality. Recent conflicts like the 1973 Yom Kippur War prove this to be true. Future conflicts will also be characterized by high levels of mobility and firepower accompanied by high loss rates on both sides. The three major armed forces of the world today, the Soviet Union, the Federal Republic of Germany and the United States of America, have all made significant investments in upgrading the power and speed of their armored and mechanized forces. The overall impact of this fact is that major land battles will continue to be characterized by intense combat and a critical requirement by opposing armies to replace losses with reserve forces and rush them into action.

Battlefield Air Interdiction is that portion of direct air support to the land battle intended to cut off this critical resupply of forces to the main battle. The United States Air Force's doctrine of Battlefield Air Interdiction is not yet fully developed. This is true for several reasons which have their roots in the United States military policy since the end of World War II. First, the United States' reliance on a nuclear strategy during the 1950's and early 1960's deemphasized the need for the development of doctrine in the employment of large conventional land forces. Second, in the 1960's and 1970's, the military establishment was involved in the conflict in Viet Nam and still had not

given adequate doctrinal thought to the employment of ground forces on a scale necessary to counter the growing Warsaw Pact conventional capability. Recent realization of this threat has forced us to address doctrine seriously.

The experiences of the Luftwaffe during World War II in the Battle of Kursk can illuminate the problems of large conventional forces, heavily supported by airpower, locked in decisive battle so critical that the survival of nations is at stake. Robert Ehrhart, in a recent article in Air University Review wrote, "Without an awareness of what airpower has done - and has not been able to do - doctrine would have to be derived solely from hypotheses, from educated guesses about the capabilities of air forces ... Past experience provides the substance for doctrine." <sup>1</sup> Furthermore, some aspects of Soviet doctrine have remained constant since the end of World War II.

Current Soviet doctrine for offensive operations calls for the echelonment of forces to discover the enemy's weak point, penetrate the enemy line, attack vulnerable rear areas, and disrupt the entire network of defense. The Soviets may divide forces into breakthrough and follow-on echelons. Follow-on echelons normally are characterized by higher mobility than first echelons. This mobility is required not only immediately after breakthrough is accomplished but also to provide the lateral movement on the battlefield necessary to carry out exploitation of rear areas of the enemy's defense. Soviet defensive doctrine is also characterized by the echelonment of forces; not only in the positioning of defenses prepared in depth,

but also in the retention of significant counterattack forces at all echelons. The Soviets will attempt to penetrate enemy lines with a division along a four to seven kilometer frontage. Such a breakthrough, given current force dispositions in Central Europe, might be faced by a NATO force of only battalion size (assuming a standard-size NATO division defending along a fifty kilometer front). Penetration would be initiated by a first-echelon Soviet division, possibly followed by a second-echelon division, possibly followed by the divisions of second-echelon army.<sup>2</sup> The interdiction of these follow-on echelons will be critical. Air Force airpower at the present time is the only conventional force which can be applied effectively against echeloned Soviet forces. Because of range limitations, indirect-fire means organic to the Army cannot successfully attack Soviet targets to the depth required to defeat these echelons.

United States Air Force and NATO doctrine currently states that direct support of the land battle by air action is divided into two parts. First, Close Air Support is "action against hostile targets in close proximity to friendly forces which requires detailed integration of each mission with the fire and movement of those forces." On the other hand, Battlefield Air Interdiction is "action against hostile surface targets which are in a position to directly affect friendly forces which requires joint planning and coordination."<sup>3</sup> There are some significant parallels in current doctrine as stated above and in that of the Luftwaffe as it faced the Soviets at the Battle of Kursk. German doctrine also

purported to use the flexibility and firepower of the Luftwaffe ground-support forces in restricting the massive influx of manpower and material that the Soviets had assembled at Kursk. While the offense has been formalized in modern Soviet doctrine, the basic concepts of mass for penetration and then exploitation of breakthrough remain the same and are in fact the goals of any highly mobile and heavily armored conventional force.

The technology both of aircraft and air defense systems has changed significantly since World War II, but neither has gained primacy on the battlefield. While the speed and firepower of the modern aircraft of today's air forces have improved, there has been a corresponding increase in the ability of new air defense systems to adequately engage high-speed targets. The accuracy and lethality of modern air-to-ground weapons is perhaps the one factor which could negate the applicability of the Luftwaffe's experiences at Kursk to today's situation. However, there is another factor that offsets technology - quantity. While the single aircraft's probability of destruction of a ground target has increased greatly since World War II, this increase is offset by a decrease in the number of aircraft. The Luftwaffe at the Battle of Kursk had 1700 aircraft available. Some 3000 sorties were flown by the Luftwaffe on the first day of the battle.<sup>4</sup> A NATO force facing the Warsaw Pact in Europe could expect significantly fewer sorties. In short, modern weapon system efficiency and the decrease in the quantity of systems available have a tendency to offset each other.

The Luftwaffe's experience in the Battle of Kursk, therefore,

can provide perspective to the current situation in Central Europe. Since Luftwaffe and current doctrine regarding Battlefield Air Interdiction are similar, an historical analysis should offer ways of avoiding the same mistakes of employment, with the resultant disaster, that were made against the Soviets at Kursk.

## NOTES

1. Robert C. Ehrhard, "Some Thoughts on Air Force Doctrine," Air University Review, March-April 1980, p. 35.
2. U.S. Army, "Soviet Commander's Tactical Planning Worksheet," (Department of Command, U.S. Army Command and General Staff College: Fort Leavenworth, KS, 1979) p. 9.
3. U.S. Air Force, Doctrine Information Publication 9, (1980), p. 5. (Quoted from NATO ATP 33(A) and ATP 27(B)).
4. William H. Tatum and E. J. Hoffschmidt, eds., The Rise and Fall of the German Air Force, 1933-1945, (Old Greenwich: WE, 1969), p. 235.



CHAPTER II  
BACKGROUND DEVELOPMENT AND EVOLUTION OF THE  
LUFTWAFFE FROM WORLD WAR I UNTIL 1943

On the eve of World War II the Luftwaffe had inherited little in the way of doctrine from World War I. During World War I two general missions were given to German tactical aircraft. One was to give direct support to attacking infantry by neutralizing enemy trench lines, the other was to suppress enemy aircraft attempting to do the same for their own infantry. Units of the Air Force in squadron size were attached directly to ground units and tasked by the ground commander. It was a basic German precept that "no battle must be fought on the ground without the Air Force making its honorable contribution." So, as the Luftwaffe began rebuilding after the failure of the policies of the Treaty of Versailles, a basic doctrinal assumption was the legacy of close cooperation with the army.<sup>1</sup> In actuality, however, the tactics to be used in the Second World War were still in experimental stages.

During the period between the end of World War I and 1936 the Luftwaffe trained its pilots and developed its doctrine outside of Germany. Additionally, continued emphasis was placed on maintaining a viable aircraft industry. Throughout this period there was a growing commitment to the concept of Close Air Support. Once Hitler came to power and the Wehrmacht was brought back into the open, German military power became an instrument of German foreign policy. However, this power was by no means complete. Notably,

the Wehrmacht lacked heavy firepower and artillery. Williamson Murray commented on this situation and wrote, "Because of the shortage of heavy artillery, German Army commanders proved almost too enthusiastic on the subject of close air support."<sup>2</sup> The first real test of Luftwaffe doctrine was in Spain with the Condor Legion, sent by Hitler to aid General Francisco Franco in his conquest of that country.

Initially, German air forces adopted a strategic bombing campaign against Spanish cities. In November 1936, Franco's forces surrounded Madrid and requested support from the Condor Legion in reducing the city. German advisers were eager to test the Luftwaffe in such a role and consented. From November 16 until November 19 the Condor Legion bombed the city and its outskirts.<sup>3</sup> In March 1938, Spanish Nationalist forces with support from the Condor Legion began the battle for the Plains of Aragon. The battle was victorious for the Nationalists notably because of air superiority. From these actions the Germans learned a great deal about the use of aircraft in support of infantry. Adolph Galland, later to become an ace in the Luftwaffe, noted that it was from this time on that a distinction was made between air-to-air fighters and ground-attack aircraft.<sup>4</sup> Afterwards, many of the Luftwaffe's leaders, but especially Wolfram von Richtofen, commander of the Condor Legion, felt the need to expand further the Luftwaffe's capability to support ground operations. The German General Staff still had not decided upon Luftwaffe doctrine, but it did lean away from the strategic and more toward the tactical aspects of airpower.<sup>5</sup>

The reluctance of the German General Staff in deciding what role the Luftwaffe would play in future ground operations was also due in part to the increase in mobility and firepower of the tank since the end of World War I, which appeared to preclude the need for extensive air support. At the same time there was general acceptance in Germany of the theory of the offense and its importance to successful military action. This fact, coupled with Heinz Guderian's concept of the principle of concentration of power on the battlefield, led increasingly to the view that the Luftwaffe was but another factor in the force ratio to be employed against the enemy's weak points. The application of airpower in conjunction with armor against the enemy's front line was thought by the General Staff to be decisive.<sup>6</sup>

In support of this concept, doctrine began to drive equipment development. Fighter-bombers became the predominant aircraft designed and produced in Germany until the beginning of World War II. Specifically, the Ju-87 Stuka was the only ground-attack fighter in the German inventory on September 1, 1939, and it was designed primarily to provide Close Air Support to army units.<sup>7</sup> The consensus of opinion among Luftwaffe leadership in the late 1930's was that strategic aircraft could not produce decisive results because strategic bombing could not be followed up immediately by ground action. The basic doctrinal mission of the Luftwaffe at this time was to assault the enemy's air forces and then to attack targets which would aid in the army's realization of its objective.<sup>8</sup> In the last analysis, the German General Staff was most concerned with the massing of firepower for armored breakthroughs. Whether that firepower was supplied by the army or the Luftwaffe was immaterial.

The Luftwaffe made every attempt to disseminate its doctrine throughout the German High Command and to this cause published Air Field Manual No. 16. In this manual, Luftwaffe doctrine on direct support, like current USAF doctrine, was separated into two parts. The first was air action against targets in an area close to the front line, described as tactical or close air support. The second was air action against enemy transportation and communications the object of which was to isolate the battle area.<sup>9</sup> There is an amazing parallel between the doctrine in Air Field Manual No. 16 and today's doctrine of Close Air Support and Battlefield Air Interdiction. What was not understood by the Germans was that isolation of the battle area was dependent on the nature of the operation and the nature of the enemy.

The use of Battlefield Air Interdiction against Polish forces in 1939 was to be much different from its use against the Soviets in 1943. Initially, as per Air Field Manual No. 16, the Luftwaffe attacked the Polish Air Force. Polish air resistance never was significant. In fact, the Polish Air Force was withdrawn to Rumania after the first few days of the battle.<sup>10</sup> The Luftwaffe now entered the second phase of its air campaign against the Polish Army. The German Army easily broke through Polish defenses and was soon chasing the retreating Poles back to Warsaw. A report from the US Military Attache' in Poland at the time stated, "Up to the present time one of the most important factors in her operations against Poland has been Germany's overwhelming superiority in the air."<sup>11</sup> The Ju-87 was instrumental in reducing obstacles in the path of the advancing army and was used in action against concentrations of

Polish troops around Warsaw. Concerning the adequacy of Luftwaffe doctrine in Poland, William Tantum wrote,

"Luftwaffe doctrine was ideal for the type of continental warfare which the German High Command had planned. It was inadequate and impossible of realization as soon as Germany's enemies ceased to allow themselves to be tackled singly and when warfare became something more than a series of isolated campaigns where German air superiority was unchallenged." <sup>12</sup>

Although the Allies had almost 4000 aircraft with which to face the Luftwaffe in France in 1940, there was no common command structure to integrate their employment. On May 10, German forces crossed the Ardennes in Belgium and within a matter of days were poised near Sedan to break through the Maginot Line. Within the first three days of battle the Luftwaffe once again dominated the skies. The Allied air forces were purely defensive and never mounted an effective counter-air operation against the Luftwaffe. By May 13, Close Air Support by the Luftwaffe had increased materially. <sup>13</sup> In the crossing of the Meuse River at Sedan the Stuka was again instrumental. For five hours, the Luftwaffe pounded the French infantry in pillboxes and trenches on the western side of the river. Then, under the cover of direct-fire weapons, Guderian crossed his forces. Alistair Horne wrote that "a new dimension of war" had been exposed. Even the toughest French regulars could not stand up to the bombardment. <sup>14</sup> By the 19th the air defense of the French was non-existent. German bombers struck at the city of Amiens at mid-day to soften it up for the next day's attack and found it "all but undefended, whether by fighters or antiaircraft." <sup>15</sup> As the German columns continued across France, the Stuka continued to be used in conjunction with spotter aircraft. This mission of sealing

off the flanks of the advancing armor was critical. Robert Jackson wrote, "It was in no small measure due to the activities of these spotter aircraft that the Panzer divisions were able to make such incredible headway in their race to the sea..."<sup>16</sup> Here, however, ground commanders became even more used to having the Luftwaffe continuously overhead. If support from the Luftwaffe was not immediately available, radio calls brought it quickly.<sup>17</sup> But, air defense was so light that during the French campaign the Luftwaffe lost only 147 assault aircraft.<sup>18</sup>

The campaign against the Soviet Union in 1941 began in the same manner, in what had now become standard Luftwaffe doctrine. The Russian Air Force was attacked with a viciousness which resulted in the destruction of over 1200 Soviet aircraft by noon of the first day. Support was then shifted to aiding the army in making penetrations and providing Close Air Support to rapidly moving ground units. However, it quickly became evident that the Luftwaffe was not large enough to cover the extensive expanses of the battlefields on the eastern front. Even as early as 1941, Luftwaffe units were subject to frequent lateral movements on the front in order to provide Close Air Support to outnumbered German ground forces to allow them to maintain momentum. By the end of 1942, the use of airpower along the front lines in direct support of the army no longer assured victory. Because of the increasing capability of the Soviets to resupply and reinforce the front lines, the Luftwaffe began to shift its emphasis toward interdiction. Changes were made to make the tactical forces of the Luftwaffe more flexible.

At the same time units became more functionally oriented. This new orientation led to the creation of such elements as night harassment squadrons, used against Soviet troop concentrations; anti-tank squadrons using Hs-129, Me-110, Ju-87 and Ju-88 aircraft; and railway interdiction squadrons using the Ju-88.<sup>19</sup>

As already mentioned, the development of aircraft closely followed the development of doctrine. The backbone of the Luftwaffe's tactical support inventory was the Ju-87 Stuka. This aircraft was a single-engine, fixed-gear dive-bomber crewed by a pilot and a rear-facing gunner. It was developed during the 1930's by Ernst Udet, the head of the Air Ministry's production division. Udet had been infatuated by dive-bomb tactics developed in the United States. The Stuka was built not so much for its load-carrying capacity or range but because of its accurate ordnance-delivery capability. It was accurate because it could withstand the steep dive angles necessary for pin-point bombing. The Stuka proved itself well in the role for which it was designed, but in later years of the war its limited speed and maneuverability became liabilities in the face of increased Soviet counter-air capability.<sup>20</sup>

The aircraft which was to take the place of the Stuka was the FW-190. This aircraft was much more maneuverable, although it carried about the same bomb load as the Ju-87. One advantage of the FW-190 was the outfitting of some models with heavy caliber rockets, allowing the Luftwaffe to institute low altitude delivery techniques against concentrations of troops and supplies. These tactics decreased exposure to antiaircraft fire and greatly increased the survivability of the FW-190 as compared to the Stuka. Later

versions were equipped with 30mm cannon and given a purely anti-tank role. However, production was not started on the FW-190 until late 1941 and then only in an air-to-air version.<sup>21</sup> Despite its effectiveness, it was not delivered to ground attack squadrons until just before the Battle of Kursk, and then in limited numbers.<sup>22</sup>

The Henschel Hs-129 was a twin-engined aircraft designed as a tank destroyer. It was heavily armored and heavily armed with from 30mm up to 75mm cannons. The 75mm gun fired a round with a weight of 26 pounds, capable of penetrating any armor. Hs-129 squadrons were responsible for repulsing the attack of an entire Russian tank brigade during the Battle of Kursk (See Chapter 3). However, as was the case with many German aircraft by the end of the war, increased numbers of Soviet aircraft made the Hs-129 extremely vulnerable to the point where per mission losses were excessive, sometimes running as high as 20%.<sup>23</sup>

Two bombers made up the remainder of the Luftwaffe's direct support forces. The first, the Ju-88, was a twin-engined bomber served by a crew of four. It could carry a bomb load almost three times that of the FW-190 or the Ju-87 and was equipped with 30mm cannon on some versions. The second bomber, the Heinkel He-111, also had two engines but one more crew member than the Ju-88. The He-111 was significantly slower than the Ju-88 and had shown itself to be vulnerable to fighter attack as early as the Battle of Britain.<sup>24</sup> These two bombers were used in this role mainly due to the lack of sufficient numbers of ground-attack fighters. By late 1943 both were switched back to the mission of strategic bombing.<sup>25</sup>



A point here about equipment needs emphasis. The Luftwaffe's slowness in developing and fielding the ground-attack version of the FW-190 was a significant error. The Ju-87 needed a minimum ceiling of 2600 feet to operate effectively. This limitation often denied ground forces support in time of poor weather. Additionally, the high altitude approaches required made dive bombing a highly vulnerable tactic in the face of effective antiaircraft fire. In fact, as early as 1934 von Richtofen had stated that advances in antiaircraft made dive bombing techniques "complete nonsense." <sup>26</sup> Until the Battle of Kursk, however, the Luftwaffe had been very successful with the Ju-87. Therefore, they neglected the FW-190 as a ground-support aircraft and the warnings of von Richtofen as well.

The Luftwaffe was also ill-prepared to face the Soviets with regards to the proper types of munitions. Standard high-explosive bombs were not effective in stopping heavily armored vehicles and tanks. Rapid work was done to improve and deploy ordnance with penetrating capability such as cannon and shaped-charge munitions. This development was somewhat successful, although the fitting of a particular weapon to an aircraft was often done in an improvised manner as exemplified when external cannons were mounted on the Stuka. The result was a decrease in speed and maneuverability in an aircraft already lacking in these critical areas.

The organization of the Luftwaffe also had an influence on how its forces were employed. The Luftwaffe was integrated into the organizational structure of the German High Command as an equal and

independent member at the start of the war. The early independence of the Luftwaffe was based on the concept that it was the one element of military power which had the flexibility to be massed at a particular point in space or time. This concept of mass was a pervasive facet of all German military thinking, notably in Guderian and others who supported the "Doctrine of Attack." It was recognized that in many cases the Luftwaffe would prove to be decisive in support of individual armies.<sup>27</sup> The High Command of the Wehrmacht was to decide how to concentrate the power of the Luftwaffe in support of ground forces. An order was then issued to the Commander-in-Chief of the Luftwaffe, who would coordinate with the army and issue orders to the appropriate Air Fleet Headquarters. The Air Fleet would then coordinate with the Army Group to whom they were providing support and issue further orders to its subordinate Air Corps or Air Divisions. The actual decision to apportion sorties between Close Air Support and Battlefield Air Interdiction missions was made at the Air Fleet level with the approval of the Army Group. <sup>28</sup>

Headquarters were organized two different ways. Initially they were assigned directly to the Army Command. In such cases the army decided the tasks to be carried out; however, the Luftwaffe staff made all decisions regarding mission execution. This concept was modified in 1942 in order to give the Luftwaffe more operational control over its own forces. After that time, Air Fleets were attached by air liaison office to the army command, normally at the Army Group level. This new system economized on the size of

Luftwaffe staffs. An attempt was still made to align an Air Fleet to each Army Group's area of operation.<sup>29</sup>

Luftwaffe personnel were trained early in their service in the intricacies of providing tactical support to the Army and in army tactics in general. These tactics were taught at the Luftwaffe Air Command and General Staff College as well as in other joint schools. There was also a separate dive-bomber school which specialized in the tactics of providing Close Air Support. Training doctrine always emphasized that the Luftwaffe was designed to attack the enemy's rear areas in the interdiction role. In the field, the army maintained an instructional staff at Luftwaffe units to keep them well briefed on the latest ground tactics. Additionally, many tactics bulletins were disseminated, giving the views of senior Luftwaffe and army tacticians.<sup>30</sup>

By mid-1943, the doctrine embraced by the Luftwaffe was a modification of that which had been originally printed in Air Field Manual No. 16. As late as the eve of the Battle of Kursk in July 1943, interdiction was considered by Luftwaffe leaders to be the most decisive mission for airpower and this point continued to be stated doctrine. Attacks were to disrupt the enemy's flow of supplies, troops and equipment to the front. Since these targets would be large and concentrated they would prove to be extremely vulnerable to attacks by the Luftwaffe. Attacks along the front were to be avoided since the targets there were necessarily dispersed and would not provide good results. Finally, Luftwaffe commanders felt airpower used to improve force ratios of ground units was to be avoided at all costs since such use was least effective.

This last mission was later to become the one most commonly assigned to the Luftwaffe at Kursk.<sup>31</sup>

The planning for Battlefield Air Interdiction missions was begun at Army Group - Air Fleet levels where the Luftwaffe's capability to carry out a mission was analyzed. If the Luftwaffe staff determined that the mission was within the capability of the Luftwaffe, the mission statement was issued. The assignment of specific missions was accomplished by the flying units themselves. The combination of fighter-bombers and fighter escorts was determined by the Air Fleet staff based on aircraft availability and the status of the Soviet threat. The Luftwaffe operated under the overall tactical principle that once a target was engaged it would be engaged by multiple attacks until it was destroyed. Therefore, extensive use of aerial reconnaissance continued. Dive-bombers were generally assigned point targets which required greater accuracy, while low-level attacks were used against area targets. It was also felt that low-level attacks could produce the extra benefit of affecting the enemy's morale.<sup>32</sup>

Timely engagement of interdiction targets was critical. By early 1943 the Luftwaffe realized that strikes at interdiction targets would have an effect on the front line situation within a few days. Soviet strategy all along the eastern front was to fight a battle in one area and then shift emphasis to another. Lateral mobility became an extremely important factor in Soviet and German plans. By 1943 interdiction became essential in combatting the lateral movement of Soviet forces. Later in the war, notably

after the fall of Orel in August 1943, the inability of the Luftwaffe (and the entire German war machine for that matter) to move rapidly to counter Soviet thrusts would prove to be decisive to Soviet victory.<sup>33</sup>

The Soviets were fond of massing troops in large concentrations close to the front lines in preparation for any operation. In 1941, the Luftwaffe often engaged Soviet troop columns in excess of 100 yards wide.<sup>34</sup> However, the best target was the Russian rail system. This was true for a number of reasons, of which the lack of an effective road system over which large amounts of heavy equipment could be transported was primary. Rainy weather often made the few available roads impassable. The Luftwaffe had initial problems in determining the correct way to go about interdicting rail traffic. Luftwaffe planners assumed that interdiction of single track routes where no bypass could easily be constructed would be most effective. For this reason transshipment points and railway depots were neglected. Later, however, it was discovered that rapid repairs could be made to sections of track along primary routes with relative ease. In fact, the only real result of attacks made on track was the tying up of a great deal of Soviet manpower in prepositioned sites as railway repair crews. Attacks on transportation centers were more successful since they usually destroyed a certain amount of supplies and equipment and effectively cut routes for a longer period of time. One drawback was that such critical areas were easier to defend and Soviet antiaircraft often took a heavy toll. A Soviet air defense officer at the time confirmed that Russian air defense fighters and the bulk of antiaircraft artillery were stationed very close to

transshipment points like railway junctions. <sup>35</sup> Another method of cutting routes on a more permanent basis was to concentrate on destroying railroad bridges. Bridges, however, were also easy targets to defend. (This was a lesson which the USAF was destined to relearn in attacks against the transportation system of North Viet Nam.) The most effective way of cutting the rail system was to attack locomotive repair facilities and the locomotives themselves. The Soviets attempted to deceive Luftwaffe pilots by instructing their engineers to release quantities of steam to simulate destruction. This tactic proved ineffective since the timing of the deception was critical. Luftwaffe pilots soon became adept at determining when a locomotive was truly hit. <sup>36</sup>

The Luftwaffe developed an excellent system of studying areas of expected action ahead of time to determine the vulnerabilities of the rail transportation system. This information was then compiled into a publication entitled "Instructions for the Strategic Assembly and Conduct of Combat Operations." This detailed study was coordinated ahead of time with the army so that German mobility would not be effected. Such coordination was not as important later in the war when movement of the front was generally east to west. What was especially noteworthy about this system was that it gave the Luftwaffe the option to plan action early and allowed timely attack of enemy concentrations and routes. <sup>37</sup>

Certain realities prevented the Luftwaffe from carrying out a more extensive and effective interdiction campaign. Principally, by 1943 the Luftwaffe was tied to an overall strategy whose objective

was to blunt Russian offensive action and force the Soviets to collapse due to heavy losses. To this purpose, Hitler decreed that battles of attrition were to be fought and forced the German Army to hold every piece of ground as if it were located in downtown Berlin. Defensive patterns were static and even encirclements were accepted in hopes that the Soviets would wear themselves out in such actions. Therefore, the Luftwaffe was tied more and more to the success or failure of the ground forces by bolstering the wall against which the Soviet forces would expend their might.<sup>38</sup> Additionally, air superiority became more fleeting as Soviet air forces began to recover from the disasters suffered in 1941. Also, by 1943, the most experienced pilots were being drained from the eastern front to counter the air threat of the strategic attacks against Germany by forces of the RAF Bomber Command and the US Eighth Air Force. Consequently, less escort was available to allow fighter bombers to attack safely behind the front lines. Armed reconnaissance missions which had been successful under earlier situations of at least local air superiority could no longer be accomplished effectively.<sup>39</sup> Such was the state of the Luftwaffe as it made preparations in early 1943 for the Battle of Kursk.

## NOTES

1. Paul Deichman, German Air Force Operations in Support of the Army, (reprint, New York: Arco, 1968), pp. 5-6.
2. Williamson Murray, "British and German Air Doctrine Between the Wars" Air University Review, March-April 1980, pp. 55-56.
3. Hugh Thomas, The Spanish Civil War, (New York: Harper and Brothers, 1961), p. 329.
4. Ibid., p. 525.
5. William H. Tatum and E. J. Hoffschmidt, eds., The Rise and Fall of the German Air Force, 1933-1945, (Old Greenwich: WE Inc., 1969), pp. 13-17.
6. Deichman, pp. 32-33.
7. Tatum and Hoffschmidt, p. 209.
8. Ibid., p. 42.
9. Deichman, p. 93.
10. Military Intelligence Division, Tactics and Technical Trends No. 2 (Washington D.C.: War Department, 23 September 1943), p. 1.
11. Ibid.,
12. Tatum and Hoffschmidt, p. 53.
13. Military Intelligence Division, Air Operations in the European War, No. 12 (Washington, D.C.: War Department, 1 August 1940), p. 4-5.
14. Alistair Horne, To Lose a Battle, France 1940, (Boston: Little, Brown and Co., 1969) p. 286-292.
15. Ibid., p. 472.
16. Robert Jackson, Air War Over France, 1939-1940, (London: Ian Allan Ltd, 1974), p. 112.
17. Air Operations in the European War, No. 12, p. 8.
18. Jackson, p. 138.
19. Tatum and Hoffschmidt, p. 53.



20. Ibid., p. 43.
21. Ibid., p. 208.
22. Christopher Shepherd, German Aircraft of World War II (New York: Stein and Day, 1976), pp. 21-22.
23. Ibid., pp. 33-34.
24. Ibid., pp. 25-28, 37-39.
25. Herman Plocher, The German Air Force Versus Russia, 1943, USAF Historical Series, No. 155, (Maxwell AFB, AL: USAF Historical Division, 1967), p. 246.
26. Deichman, pp. 34-37.
27. Ibid., pp. 14-15.
28. Ibid., pp. 95-96.
29. Ibid., pp. 16-18.
30. Ibid., pp. 53-56.
31. Ibid., p. 96.
32. Ibid., p. 102.
33. Ibid., p. 96.
34. Ibid., pp. 108-109.
35. Ivan Parotkin, ed. The Battle of Kursk, (Moscow: Progress Publishers, 1974), pp. 250-251.
36. Klaus Uebe, Russian Reactions to German Airpower in WW II, USAC Historical Series No. 176, (Maxwell AFB, AL: USAF Historical Division, 1964), pp. 55-60.
37. Deichman, p. 101.
38. Uebe, p. 27.
39. Deichman, pp. 89-91.

### CHAPTER III

#### THE BATTLE OF KURSK

The Battle of Kursk was to be the decisive test for the Luftwaffe and the entire Wehrmacht on the Eastern front. Kursk was important for several reasons. A bulge in the German front centered around Kursk had been taken by the Soviets in early 1943. The existence of this salient required the Germans to hold 300 miles of front along the boundary between Army Group Center and Army Group South, stretching German forces critically thin on the Eastern front. Additionally, the Russian salient lay across the important lateral rail route connecting the transshipment point at Kharkov with Army Group Center. Finally, the bulge in the German lines gave the Russians the opportunity to threaten the flanks of both Army Groups Center and South by giving them the potential to attack either north or south. <sup>1</sup> (See Appendix 1) Strategically, Hitler hoped that an attack and encirclement of Soviet forces at Kursk would halt the Soviet westward momentum and force a decision favorable to Germany.

Specifically, the German high command ordered five missions to be accomplished during Operation Citadel, the German code name for Kursk. 1.) Shorten the line around Kursk. 2.) Reestablish the rail route between Army Group Center and Kharkov. 3.) Cut off and annihilate Soviet forces. 4.) Protect the flanks of Army Group Center and Army Group South. 5.) Force the Soviets to commit forces before rehabilitation after their winter offensive. Ultimately, this last mission was intended to weaken the entire front and facilitate

offensive action elsewhere.<sup>2</sup> Paul Carell was later to summarize the importance of Kursk:

"It was not Stalingrad but Kursk which was, in every respect, the fateful and decisive battle of the War in the East. Just as Waterloo sealed the fate of Napoleon in 1815 . . . Kursk heralded a turning point in (World War II) and led directly, two years later, to the fall of Hitler and the defeat of Germany . . ."<sup>3</sup>

Preparation by both the Russians and the Germans for the impending Battle of Kursk reached a fevered pitch by the spring of 1943. Hitler's generals were hoping for an early initiation of the battle because they saw an advantage in striking before the Russians were able to complete the refitting and reinforcement of the front after the campaigns of the previous winter. Hitler delayed the battle into the summer hoping that the delivery of new and improved German tanks would give a better chance for victory. In a sense, Hitler was hoping that technology would be able to overcome the quantitative disadvantages which the eastern front Army Groups faced.<sup>4</sup> Hitler gave specific guidance for the planning of the thrust on Kursk. With respect to the Luftwaffe, his instruction was to give maximum support to the ground forces in direct support operations.

In response to this guidance, two air fleets were assigned to the two major ground forces in question. These two ground forces consisted of the Ninth Army, under the command of Generaloberst (later Field Marshal) Walter Model, on the northern side of the salient, and the Fourth Panzer Army under the command of Generaloberst Hermann Hoth in the south. The eastern flank of the Fourth Panzer was to be covered by Army Force Kempf under the command of General

der Panzertruppe Franz Kempf. The Ninth Army was to be supported by the Sixth Air Fleet and the Fourth Panzer Army and Army Force Kempf were to be supported by the Fourth Air Fleet.<sup>5</sup> (See Appendix 2)

With the onset of good flying weather in April 1943, the Luftwaffe initiated its deep interdiction campaign against the Soviets while German ground forces prepared for the offensive. Interdiction of road and railway traffic was emphasized. Strikes did heavy damage to supply depots at Kalinin, Toropets and Velikopolye. Until the end of March the entire Luftwaffe Command East was involved in assisting the Second Panzer Army in consolidating its positions around Orel. Orel presented a salient into the Russian front line just as Kursk was a salient into the German defenses. (See Appendix 3) Spring rains resulted in a decrease in ground action and allowed for the stepped-up interdiction effort.<sup>6</sup>

Land and air forces continued to build in the area as June 1943 began. By now the Soviets were aware of the existence of a major impending German effort somewhere in the vicinity of the Russian Central and Voronezh Fronts (the boundary of which was formed by a line extending east from Kursk). The Russians were in the process of completing an extensive system of defenses in depth around Kursk. Seven defensive lines were built within the salient and an additional line ran north and south through the town of Voronezh.<sup>7</sup> Marshal Georgi Zhukov wrote that antitank defenses were especially prevalent and in "great depth" in anticipation of German armor strikes.<sup>8</sup> These positions were developed with great difficulty since the Luftwaffe had been effective in stopping the rail movement

of significant amounts of equipment and had destroyed many rail-heads east of Kursk. (The battlefield was not totally isolated, however, since the Russians were able to resort to long road marches.)

Appendix 3 shows the locations of Luftwaffe interdiction attacks against Soviet lines of communication in the area around Kursk.<sup>9</sup>

In the final weeks of preparation just prior to the end of June, the Luftwaffe began concentrating on grounding the Soviet Air Forces and interdicting the rail lines in the immediate area of Kursk. Overall, the air interdiction campaign did not have a significant result on Soviet capability in the upcoming battle. This was true because, in spite of the massive effort mounted by the Luftwaffe, insufficient forces were employed to interdict adequately the routes available to the Soviets. In analyzing the results of the interdiction campaign, former Luftwaffe commander Generalleutnant Hermann Plocher wrote:

"Because the Sixth Air Fleet (and Fourth Air Fleet) lacked sufficient force, particularly suitable units, and because its operational area was so vast, it was unable to seal off the probable area or to annihilate the enemy concentrations."<sup>10</sup>

Very broad missions were assigned to the two Air Fleets. They were to use long-range aircraft to interdict Russian communications and provide Close Air Support to aid the Army Groups in making narrow front penetrations. Additionally, the Air Fleets were instructed to make independent contact with the applicable ground force units and work out necessary details. This was in keeping with previously established doctrine regarding the planning of major operations.<sup>11</sup> In response to guidance developed out of the coordination between the Army Groups and Air Fleets, each fleet was given missions which were considered essential for its respective

area of operation. The Sixth Fleet in the North was initially to attack Soviet airfields and artillery concentrations throughout the salient prior to the initiation of any ground maneuver. As the battle progressed, attacks were to be shifted to support the XXXXVII Panzer Corps, which was the Ninth Army's breakthrough element, and the Second Panzer Army, which was defending in the remainder of the Orel salient. An added mission for the Sixth Air Fleet was to "patrol the entire assault area." The Fourth Air Fleet in the south was initially assigned to gain air superiority over the line of advance. Emphasis was then to be shifted to providing general support for all elements of the Fourth Panzer Army and Army Force Kempf. Additionally, close contact was to be maintained with the II SS Panzer Corps, the southern force's breakthrough elements. Finally, the Fourth Air Fleet was directed to interdict large concentrations of targets wherever found behind Russian lines.<sup>12</sup> This last mission was to prove critical in the upcoming action.

By April 1943, it became evident that the German high command and Hitler were committing the bulk of the eastern German Air Forces to Kursk. The operational forces of the Sixth Air Fleet were placed under the control of the First Air Division, commanded by Generalmajor Paul Deichmann at the Orel airfield. By the eve of the Battle of Kursk, on 4 July 1943, this force consisted of 730 aircraft. The forces of the Fourth Air Fleet were under the operational control of the Eighth Air Corps and the command of Generalmajor Hans Seidemann. Consisting of 1100 aircraft, Seidemann's forces were the more formidable of the two Air Fleets. The Eighth Air Corps was headquartered

at Mikoyonovka, just south of Belogorod. <sup>13</sup> (See Appendix 4)

The Fourth and Sixth Air Fleets controlled over 1800 of a total of 2500 aircraft of all types on the entire eastern front. Luftwaffe units were released from duties on other portions of the front and replaced with less capable Rumanian and Hungarian units who were given defensive missions. Several operational problems affected the Luftwaffe at Kursk. Trained personnel were in short supply. Consequently, aircrews had to absorb heavy sortie loads throughout the preparation and execution phases of the battle. The availability of single-engine aircraft was low - 600 in the two Air Fleets. (The Luftwaffe was able to form and field some FW-190 units which gave added capability both in air superiority and ground support. <sup>14</sup>) Another critical problem in the three months prior to July 1943 was that units were being continually shifted not only within the front but from front to front. Lee Asher noted that large numbers of the Luftwaffe's best pilots were moved to the western front to man German fighter defenses. The crews who replaced these men were "much less competent, not so well trained and lacking the morale boost provided by the operational successes which had attended German air operation in previous years." <sup>15</sup>

The Battle of Kursk began late in the afternoon of 4 July 1943 with several German units making small advances in order to control key terrain for the next morning's general offensive action. At 0300 on 5 July the Fourth Panzer Army initiated the most massive artillery barrage to date in the war. "Within fifty minutes more shells were fired off ... than in the whole of the (German) campaigns in Poland and France combined." <sup>16</sup> The Ninth Army in the north and

the Fourth Panzer Army in the south began their drives toward what was hoped to be a link-up at Kursk and an encirclement of massive Soviet forces.

Early in the morning, as the Luftwaffe prepared to launch its initial air strikes in support of the two Army Groups, disaster was in the making. Through intelligence supplied by the "Lucy" spy ring, headed by an anti-Nazi German named Rudolph Roessler, which placed the initiation of the German offensive somewhere between 3 and 6 July, the Soviets were prepared for the Luftwaffe.<sup>17</sup> The Red Air Force was launched to attack the Luftwaffe before it was able to get airborne. The German plan was to launch all ground-attack aircraft first and have them orbit over the airfields waiting for the launch of their escort fighters. The initial launch of ground-attack aircraft was made from the 16 airfields around Kharkov. The ramps and taxiways were jammed with the fighters waiting the completion of the ground-attack formation process. At this most vulnerable time, several individual German radar screens simultaneously showed large formations of Soviet aircraft approaching Kharkov. Without breaking radio silence, individual Luftwaffe commanders launched their fighters early and successfully intercepted the Russians. German sources claim this action and other air-to-air engagements during the first 24 hours of the battle resulted in Soviet losses of 432 aircraft with negligible German losses.<sup>18</sup> During the morning of the 5th of July elements of the First Air Division and the Eighth Air Corps destroyed Soviet artillery batteries and reserve forces in the areas of the two breakthrough armored corps.



General Model in the north succeeded in making an early breakthrough and by 7 July his Army had penetrated a total of 10 miles along a seven-mile front. However, at this point, momentum was stopped by a Soviet counterattack near the northern part of the Kursk bulge just ahead of the Orel salient. Fighting in the south was equally difficult, but a breakthrough was accomplished there by the XXXXVIII Panzer Corps on 7 July, seven miles south of Oboyan.<sup>19</sup> Both penetrations were critical since the Germans knew that the Russians were attempting to move in strategic reserves from the Steppe Front in order to counterattack. Both Hoth and Model needed maneuver room to successfully engage these counterattack forces. Once the penetration had been accomplished, Hoth thrust straight at the counterattacking Russian force with the intent of fixing them in position before turning north for the link-up at Kursk. The SS Panzer Corps and the XLVIII Panzer Corps now poured through the hole ripped in the Russian Sixth Guards Army by the XXXXVIII Panzer Corps. As these two corps wheeled northwest, SS Panzer Corps in the east and XLVIII Panzer Corps in the west, the right flank of the force was left open. (See Appendix 5) The First Soviet Tank Army sent two regiments into the flank of the SS Panzer Corps. This Soviet force, even before coming in contact with German ground forces, was engaged by elements of the Fourth Air Fleet.<sup>20</sup>

During this action, Colonel Hans Ulrich Rudel engaged and destroyed in one mission twelve Soviet tanks with his Stuka armed with twin 37mm cannons. This aircraft configuration was new to the front. Rudel had developed and tested the concept at the Luftwaffe's

test facility at Rechlin near Berlin and later at Bryansk on the eastern front, but was not operational until Kursk. Rudel attacked each tank from the rear and in many cases used only one round per tank kill. While this model of the Stuka was effective against armor, it was not deployed in significant numbers until after the Battle of Kursk. This was largely due to the fact that there had been little impetus to antitank research until Kursk. After Kursk, the Luftwaffe realized that the Stuka could be employed effectively in other than a dive-bomber role. <sup>21</sup>

Action continued to be heavy both in the north and the south. The Ninth Army in the north was still having difficulty in moving significant forces through the penetration. However, in the south the two spearhead corps of the Fourth Panzer Army were moving rapidly. The SS Panzer Corps under the command of Generaloberst der Waffen SS Paul Hausser had penetrated the last defenses of the Soviet XXXI Tank Corps and was about to strike at the rear of the First Soviet Tank Army. General N. F. Vatutin, Commander-in-Chief of the Voronezh Front, was aware of the critical threat to his command. Army Force Kempf, the flank covering force for the Fourth Panzer Army, was unable to move to the north rapidly enough to stay astride the SS Panzer Corps. Consequently, the Corps' right flank was exposed and that was where Vatutin prepared to strike. As strategic reserves moved in from the Steppe Front, Vatutin assembled from these forces sixty T-34's with associated infantry and artillery support and committed them against the SS Panzer Corps. In the morning of 8 July, as this force was moving through a forested area into the open just east of

its intended victims, it was spotted by a reconnaissance patrol of the 9th Ground Support Squadron. The patrol was led by the commander of the 4th Group, parent unit of the 9th, Hauptman Bruno Meyer. Meyer radioed back to Mikoyanovka and arranged for the sequential launch of his group. Four squadrons of nine aircraft each were launched against the Soviet force. Between these attacks by the Group's Hs-129 aircraft, FW-190's attacked the supporting infantry with fragmentation bombs. In one hour's action, the Luftwaffe succeeded in destroying 50 of the 60 tanks and totally stopping the Soviet counterattack.<sup>22</sup> This is an excellent example of a well-executed Battlefield Air Interdiction action. An ironic footnote to this action is that the Fourth Panzer Army, aware of the existence of the Soviet counter-attack force, made a request for Luftwaffe support through normal Army Air Fleet liaison channels after the 4th Group had already completed its attacks.<sup>23</sup> While this was only a local action, it showed how decisive airpower could be when used against concentrations of ground forces.

Action in the Fourth Panzer Army's area south of Kursk came to a climax near Prokhorovka on the morning of 12 July 1943. A swirling tank battle raged near this town just across the Psel River between the Soviet Fifth Guards Army and two corps of the Fourth Panzer Army. A total of 1450 tanks met along a front only five miles wide with raging air battles overhead.<sup>24</sup> It was here that the fate of German forces on the eastern front was decided. The Waterloo of the war with Russia had arrived. General P. A. Rotmistrov, Commander of the Fifth Guards Army, was in a position to witness this massive battle. His impressions of the ensuing battle give witness to the

intensity of the conflict.

"The tanks were moving across the steppe in small packs, under cover of patches of woodland and hedges. The bursts of gunfire merged into one continuous, mighty roar. The Soviet tanks thrust into the German advanced formations at full speed and penetrated the German tank screen. The T-34's were knocking out Tigers at extremely close range... The tanks of both sides were in closest possible contact... At such range there was no protection in armor and the length of the gun barrels was no longer decisive. Frequently, when a tank was hit, its ammunition and fuel blew up, and torn-off turrets were flung through the air over dozens of yards. At the same time over the battlefield furious aerial combats developed. Soviet as well as German airmen tried to help their ground forces to win the battle. The bombers, ground-support aircraft, and fighters seemed to be permanently suspended in the sky over Prokhorovka. One aerial combat followed another. Soon the whole sky was shrouded by the thick smoke of the burning wrecks..." 25

Elements of the Soviet Western and Bryansk Fronts on the very same morning of 12 July took the initiative away from the Germans and went on the offensive in the Orel salient. They attacked deep into the Second Panzer Army which had been given a defensive mission and had been stripped of its armor and antitank forces in favor of the action at Kursk. The Ninth Army soon found its rear threatened and Model was forced to call off the action north of Kursk and wheel to face the attacking Russians. It was predominantly infantry that held the Orel salient in the face of attacks by the Soviet Fiftieth, Eleventh Guards, Sixty-First Guards, Third and Sixty-Third Armies. Consequently, massive Luftwaffe support from the Sixth Air Fleet was shifted from the Ninth Army to stave off disaster for the Second Panzer Army. 26

Meanwhile, Hitler met with the two commanders of Army Group Center and Army Group South and informed them that the Allies had landed on Sicily on 10 July and that he was convinced there was,

therefore, a danger of losing Central Europe. When Hitler also told them he was considering calling off the Battle of Kursk, von Manstein (Army Group South) was shocked. Von Kluge, commander of Army Group Center, agreed since he was already in the process of moving the Ninth Army north to support the Second Panzer Army around Orel. Army Group South was allowed to continue its offensive. However, on 17 July Hitler effectively ended the Battle of Kursk and the last great German offensive of World War II by ordering the SS Panzer Corps to Italy. <sup>27</sup>

During the retreat of the Ninth Army and the Second Panzer Army from the Orel salient, the Russians threatened the critical Bryansk-Orel railroad over which the German forces were being moved. Ground reserves were unable to respond quickly enough and for two days elements of the First Air Division of the Sixth Air Fleet kept the route open. <sup>28</sup> By 31 July, the withdrawal to the base of the salient by successive phase lines had been started. By 5 August all action was complete and Orel had been lost to the Soviets.

The Luftwaffe effort at Kursk was impressive despite the overall outcome of the battle. Nearly 26,000 sorties were flown during the offensive phase up until 31 July when significant forces were shifted to the north to assist the withdrawal of the Second Panzer Army. During the first week of the Battle of Kursk sortie rates averaged 3000 per day. After this week rates dropped to 1500 per day, but overall rates stayed at an average 1000 per day for the entire period. <sup>29</sup> The Battle of Kursk was history. But its significance as a study of air power in support of ground forces is important and one which needs to be more closely scrutinized. The German defeat at Kursk

was not a foregone conclusion. More effective use of the airpower of the Luftwaffe might have shifted the balance in the German's favor.

## NOTES

1. Hermann Plocher, The German Air Force Versus Russia, 1943, USAF Historical Series, No. 155, (Maxwell AFB, AL: USAF Historical Division, 1967), p. 70.
2. Ibid., pp. 70-71.
3. Paul Carell, Scorched Earth, (New York: Ballantine Books, 1966), p. 90.
4. Albert Speer, Inside the Third Reich, (New York: Macmillan, 1970) pp. 319-320.
5. Plocher, p. 72.
6. Ibid., pp. 51-57.
7. Soviet Historical Encyclopedia, Vol. 8, 1965, p. 321.
8. Georgi K. Zhukov, Marshal Zhukov's Greatest Battles, (New York: Harper & Row, 1969), p. 230.
9. Plocher, p. 66.
10. Ibid.
11. William H. Tatum and E. F. Hoffschmidt, eds., The Rise and Fall of the German Air Force, 1933-1945. (Old Greenwich: WE, 1969, p. 419.
12. Plocher, pp. 77-78.
13. Ibid.
14. Tatum and Hoffschmidt, p. 233.
15. Lee Asher, The Soviet Air Force, (New York: John Day Co., 1962), p. 60.
16. Carell, p. 41.
17. Alexander Boyd, The Soviet Air Force Since 1913, (New York: Stein and Day, 1977), pp. 170-171.
18. Carell, pp. 54-58.
19. Klaus Uebe, Russian Reactions to German Airpower in WW II., USAF Historical Series, No. 176, (Maxwell AFB, AL: USAF Historical Division, 1964), pp. 88-91.

20. Carell, p. 42.
21. Ibid., p. 61.
22. Ibid., p. 69.
23. Plocher, pp. 95-97.
24. Carell, pp. 74-76.
25. Ibid., p. 76.
26. Plocher, p. 97.
27. Carell, pp. 83-90.
28. Plocher, pp. 99-100.
29. Tantum and Hoffschmidt, p. 235.



## CHAPTER IV

### ANALYSIS OF THE LUFTWAFFE'S EFFORT

The Luftwaffe suffered from many limitations and problems in the actual execution of the Battlefield Air Interdiction mission. These problems can be categorized as being related to equipment and munitions, Russian countermeasures, and tactical requirements to divert all efforts to the Close Air Support of ground forces. No single factor was decisive but each contributed to the unsatisfactory results, some more than others. An analysis of these factors might better illuminate the reason for the German defeat.

Luftwaffe aircraft in 1943 were inadequate to conduct an extensive or effective interdiction campaign. Problems stemmed from pre-war decisions concerning the type of aircraft to be fielded by the Luftwaffe. The backbone of the fighter-bomber force in 1943 was still the Ju-87 Stuka. This aircraft initially was developed before the war to serve as a complement to heavy artillery. As such, it was designed specifically to play a role in the breakthrough of strong defenses along international borders and other prepared defensive positions. The German General Staff envisioned that in support of blitzkrieg tactics, the armored columns of the army would rely on the flexibility and precision of dive-bombers such as the Stuka to reduce enemy defenses with high explosive ordnance. Several assumptions had to be made in relying on the Stuka in such a role. Because it was slow and maneuvered poorly, local air superiority was essential. Because of the tactics required to execute a successful

dive-bomb attack, antiaircraft fire also had to be relatively light or excessive losses would result. Dive-bombing required approaches into the target area from high altitudes, making acquisition and engagement by enemy antiaircraft batteries more likely. Finally, the Stuka was designed to carry loads of conventional high explosive ordnance. Such ordnance was generally effective against lightly armored vehicles, man-made structures, and troops in relatively unprotected positions, but not heavy armor. All of these conditions were present in early campaigns on both the eastern and western fronts. The most important requirement guiding Luftwaffe leaders during these early campaigns was that of insuring that Close Air Support was provided to the army.<sup>1</sup>

As the war progressed the situation changed drastically along the eastern front. The Soviets began to introduce significant numbers of heavily armored T-34 tanks. The Stuka using dive-bomb tactics and conventional high explosive ordnance was not effective in stopping such heavy armor. Moreover, the use of armor by the Soviets in breaking through more thinly-held German positions made effective tank-killing by aircraft more critical. The decision was made to deploy a ground-attack version of the FW-190; however, significant numbers never reached eastern air forces until after July 1943.<sup>2</sup> Most new FW-190's were earmarked for commitment on the western front against American and British bombers. The Stuka was best suited for Close Air Support and was used almost exclusively in that role. This was true not only because of its design, but also because Luftwaffe and army planners resisted using the Stuka in any other way because of its earlier successes. Cluster bombs were still in experimental stages and

were effective only against unprotected troop concentrations.<sup>3</sup> Anti-armor cluster bombs were unavailable. For this reason, many older aircraft were fitted with cannon and rockets to provide the penetrating capability needed to attack and destroy heavy armor. By the end of 1942 Soviet armored forces were larger and better protected. The Luftwaffe suddenly found itself struggling to develop ways to attack Soviet armor without taking unacceptable losses.

An effective capability against Soviet armor was important not only for the reasons mentioned above but also because German ground forces were being outgunned all along the front. Army commanders began to rely more and more on the Luftwaffe to make up for the disparities in numbers of tanks vis-a-vis the Soviets and the lack of an effective German antitank capability. At Kursk the Germans possessed a formidable force of 2500 armored vehicles but faced an array of from 3600 to 5000 Soviet armored vehicles.<sup>4</sup>

In early campaigns against Russia, the Luftwaffe had broken up Soviet armored columns as they attempted breakthroughs. In order to maintain this capability, major modifications were developed for the Stuka. Research to upgrade the Stuka's antitank capability began in earnest in early 1943. It was then the aircraft was fitted with twin 37mm cannons. Additionally, the Ju-88 was equipped with the 75mm gun. Such weapons gave the aircraft a highly accurate method of delivering armor-piercing ordnance. Modified Stukas, however, required increased fighter escort due to the maneuverability problems the aircraft experienced from the externally mounted guns. The FW-190 was already equipped with two 30mm guns and did not require additional

modification. Additionally, the FW-190 was powered by an air-cooled engine, thus making it far less vulnerable than the Stuka with its water-cooled system.<sup>5</sup> The fact that the Luftwaffe concentrated on developing airborne gun systems indicated where it placed its emphasis. A gun was best used against a pinpoint target such as a single vehicle attacked in a Close Air Support situation where accuracy was critical. On the other hand, area munitions were best employed against concentrations of targets found more distant from friendly troops.

The Russians were able to contest many of the Luftwaffe's efforts at interdiction. Marshal Zhukov insisted that the fighter strength of the fronts to be involved at Kursk be increased to give the Red Air Force numerical superiority over the Luftwaffe.<sup>6</sup> Additionally, Air Marshal Sergei Rudenko, commander of the Soviet 16th Air Army at Kursk, wrote that along with these aircraft, antiaircraft artillery was highly concentrated.<sup>7</sup> Soviet fighters were ineffective against the Luftwaffe during the initial stages of the battle itself. After the replacement of two air army commanders on 8 July, however, the Soviet Air Force became more aggressive. This fact coupled with the Luftwaffe's lack of replacements gave the Soviets a distinct numerical advantage by the end of the battle.<sup>8</sup> While this advantage would seem significant, it was Soviet antiaircraft which caused the Luftwaffe its heaviest losses. As mentioned, the Soviets heavily fortified transshipment points after the Luftwaffe began to attack them. Not only were they protected with antiaircraft artillery but they were also hardened with protective structures which caused the Luftwaffe to direct more sorties against each target. So heavy were these antiaircraft defenses that four times as many aircraft were lost to them than to Soviet fighters.<sup>9</sup>

Perhaps no other fact was more important in explaining the lack of an effective Battlefield Air Interdiction campaign at Kursk than the demand for Close Air Support from individual armies. Initial allocation of direct support missions was accomplished by the Wehrmacht High Command through the Luftwaffe High Command. The Air Fleet was given the mission and would coordinate directly with the Army Group it was to support. The Luftwaffe was responsible for the methods to be used in carrying out a particular task, but the ground commander was responsible for determining the task, that is, what portion of the direct support missions were to be Close Air Support and what portion Battlefield Air Interdiction. Consequently, the Luftwaffe became subordinate to individual Army Group Commanders in decisions regarding the priority of direct support missions. As the war progressed on the eastern front and the ground force commanders found themselves more frequently outgunned and outmaneuvered, they requested more Close Air Support as opposed to Battlefield Air Interdiction missions. Furthermore, the Close Air Support missions were poorly controlled. A particular Air Corps was usually assigned to a certain Army whose commander was often reluctant to release his Close Air Support sorties for another mission or to a more threatened sector of the Army Group. <sup>10</sup>

Not only were the imperatives of a desperate ground situation for this shift toward overemphasis on Close Air Support, but the ground commanders also had become accustomed to the firepower the Luftwaffe offered. Commanders would habitually request large commitments of airpower to improve force ratios and attempt to offset the risk involved in whatever course of action they might have chosen.

Immediately after the battle, the US Military Intelligence Division received information from Russian sources regarding any new trends in German tactics. The source reported, "As distinct from former tactics, the Germans have set only one problem before their aircraft - the closest possible coordination with tanks and infantry units in breaking through our front line of defense and in exploiting the success."<sup>11</sup> But this entire process became self-defeating and a paradox for the entire German effort. More and more sorties were devoted to Close Air Support allowing the Soviets to resupply the front lines with greater ease. Beginning at Kursk, when the Luftwaffe was diverted to plugging holes in the front, the war was lost for Germany.<sup>12</sup> Leaders of the Luftwaffe realized this was happening but, because of the primacy of the army on the German General Staff, were powerless to do much. General Plocher wrote that, "The German command was aware of the need for attacks deep in the rear of the operational area in order to interdict the battlefield (but) the air forces available were far too weak."<sup>13</sup> John Greenwood also wrote about this situation in a recent history of Soviet aviation. Not only did the Luftwaffe's requirements to provide Close Air Support prevent it from challenging Soviet Frontal Aviation at Kursk, but also, "Unable to meet the vastly increased demands for close air support, the Luftwaffe lacked the strength to affect the outcome of the ground fighting."<sup>14</sup>

There was one other result of the heavy commitment to Close Air Support which was to further deplete the operational capabilities of the Luftwaffe. The Soviets began to mass heavy concentrations of antiaircraft weapons along the front lines, knowing the Luftwaffe

was committed to this portion of the battlefield. At the same time the Soviets made extremely effective use of small-arms fire against German aircraft. So effective was this combined antiaircraft fire that the Luftwaffe soon was unable to operate below 7500 feet for any extended period of time near the front without suffering extreme losses. The net result was a higher risk for missions along the front below this altitude, but with less chance for significant results. <sup>15</sup>

General Diechmann concludes in his work on Luftwaffe ground support that German air forces were used as a final solution to problems which were created by the army's lack of adequate forces to undertake offensive or static defensive operations, and that the High Command of the Wehrmacht (Hitler) was unwilling to allow for a realistic defensive posture. The basic error was in not realizing that the Luftwaffe would never be decisive over the front lines in the Close Air Support role, but rather should have been concentrated where it could operate against concentrations of enemy troops and supplies. General Diechmann was so sure of the need to reassess the nature of tactical support that after the war, he wrote:

"...It may well be that in future war new technology will reduce or entirely do away with the necessity to commit air forces in action over the actual field of battle, which as a rule is an uneconomical use of air power." (emphasis added) <sup>16</sup>

There were, no doubt, a number of reasons for the failure of the Luftwaffe to carry out its stated doctrine of Battlefield Air Interdiction at Kursk. During the period of the war from its outset in September 1939 until the eve of the Battle of Kursk in July

1943, planning of the German high command was guided by a geopolitical philosophy which equated the loss of territory with defeat and the gain or retention of territory with victory. The Luftwaffe's mission was to aid the army in making breakthroughs and then exploiting those breakthroughs to force favorable movement of the front lines or, in defensive battles, to prevent the Russians from doing the same. This was a natural doctrine for a continentally-oriented geopolitician like Hitler. This orientation was exemplified by the absence of any effective strategic bombing campaign against the industrial base of the Soviet Union. Whatever the cause, the Luftwaffe's overemphasis of Close Air Support and its neglect of Battlefield Air Interdiction during the Battle of Kursk were the primary factors in its inability to decisively apply airpower.



#### NOTES

1. William H. Tatum and E. J. Hoffschmidt, eds., The Rise and Fall of the German Air Force, 1933-1945, (OTD Greenwich: WE, Inc., 1969), p. 43.
2. Hermann Plocher, The German Air Force Versus Russia, 1943, USAF Historical Series, No. 155, (Maxwell AFB, AL: USAF Historical Division, 1967), p. 243.
3. Paul Deichman, German Air Force Operations in Support of the Army (reprint, New York: Arco, 1968), pp. 47-49.
4. Christopher Chant, Kursk, (London: Abmark Ltd, 1975), pp. 10-12.
5. Deichman, pp. 37-38.
6. Alexander Boyd, The Soviet Air Force Since 1918, (New York: Stein and Day, 1977), p. 173.
7. Ivan Parotkin, ed., The Battle of Kursk, (Moscow: Progress Publishers, 1974), pp. 250-251.
8. Boyd, p. 176.
9. Klaus Uebe, Russian Reactions to German Airpower in WW II, USAF Historical Series, No. 176, (Maxwell AFB, AL: USAF Historical Division, 1964), pp. 69 and 81.
10. Deichman, p. 101.
11. Military Intelligence Division, Tactical and Technical Trends No. 33, (Washington D.C.: War Department, 9 September 1943), p. 2.
12. Deichmann, p. 166.
13. Plocher, p. 86.
14. John T. Greenwood, "The Great Patriotic War, 1941-1945," Robin Higham and Jacob W. Kipp, eds., Soviet Aviation and Airpower, A Historical View, (London: Brassey's, 1978), pp 100-101.
15. Uebe, p. 82.
16. Deichmann, p. 152.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

The results of the air campaign by the Luftwaffe during the Battle of Kursk do not reflect stated Luftwaffe doctrine at that time. Hitler dictated that territory on the eastern front be held at all costs, or that if territory was lost, a counterattack be launched to regain it at the first opportunity. Because of this policy, German forces were spread excessively thin along the entire front.<sup>1</sup> Luftwaffe forces used as Close Air Support became critical because of the firepower they added to an already tenuous position along the front. Because of this, German commanders lost appreciation for the decisiveness of airpower used against large concentrations of troops in the enemy's rear areas. These German commanders never realized that they were making grave errors in the allocation of direct support sorties until after war. Then Luftwaffe Generals were willing to state that airpower had been misapplied.

The same problems faced by the Germans are potential problems for NATO commanders in planning for future battles in Central Europe. All too often current Army doctrine considers airpower to be an adjunct to "fire support" or simply a "combat multiplier" in the Close Air Support role. In fact, doctrine should recognize that tactical airpower may be more decisive when used as Battlefield Air Interdiction. The Battle of Kursk demonstrates such misapplication. In critiquing the Luftwaffe's use, General Plocher wrote:

"In critical situations, the Luftwaffe was usually the only medium available to the German Supreme Command and other high level commands to compensate for the Army's heavy weapons losses and its lack of reserves," <sup>2</sup>

This situation developed for many reasons. At the highest level of German decision making, Hitler had become disenchanted with Goering after the Luftwaffe failed to resupply Stalingrad. Hitler's strategic thinking focused on the control of territory. He blamed Goering for defeat at Stalingrad and from that time on demanded the total acquiescence of the Luftwaffe to his demands. <sup>3</sup> An example of the total subjugation of Goering to Hitler's demands comes from a post-war interrogation of Goering. He stated that Hitler ordered some of the world's first operational jet fighters, the Me-262, to be equipped with antitank guns and given a ground-support role, a mission for which it was never intended. This came at a time when allied strategic bombing was battering the defenseless German population. <sup>4</sup>

Not all of the Luftwaffe's problems can be attributed to Hitler's miscalculations. The leaders of the Luftwaffe, from its earliest pre-war inception, failed to recognize the true potential of airpower. Near the end of the war a Luftwaffe colonel was captured and questioned about the Luftwaffe's ability to operate in the many modes which a three-front war required. The colonel answered the none of the Luftwaffe's planners ever envisioned the air force to be much more than a platform for airborne artillery used in the Close Air Support of ground forces. The concept of strategic air forces was even more incomprehensible to tacticians who would not allow themselves to consider fighting a protracted war like World War I. The captured colonel admitted, "Unfortunately, we lacked this

far-sighted planning, so that as a member of the (Luftwaffe), I have to admit that the war which Germany is now waging has been lost by the (Luftwaffe)." <sup>5</sup> No doubt there lies an explanation behind the Luftwaffe's inability to affect decisively the outcome of the war somewhere between all blame being ascribed to Hitler and all blame being absorbed by the Luftwaffe itself.

Before summarizing the effectiveness of Battlefield Air Interdiction by the Luftwaffe at Kursk, passing mention should be made of the lack of German strategic bombing. The absence of any real strategic capability cost not only German ground forces but also the Luftwaffe dearly at the hands of the Soviets. Richard Suchenwirth, in analyzing this problem wrote:

"German destruction of enemy tanks on the Eastern front was purchased at the cost of tremendous effort - by sacrificial armor piercing weapons; or by the employment, invariably accompanied by heavy losses, of the Luftwaffe."<sup>6</sup>

The lack of strategic effort is a major factor in analyzing the battlefield. Suchenwirth also wrote, "it is difficult to stop a rushing stream; its source, however, can be dammed up with little effort." <sup>7</sup> This analogy sounds simplistic, but it is the crux of the argument for strategic air forces. We can only hope that any future conflict in Europe would not witness a repetition of this very basic error.

The most obvious doctrinal problem encountered by the Luftwaffe at Kursk revolved around its inability to break itself away from the control of ground commanders. This is not to say that the firepower ground commanders desired could not be best supplied by the Luftwaffe, rather that they depended so much on such firepower.

The problem was that ground commanders came to rely on the Luftwaffe to supply Close Air Support as it had throughout earlier campaigns of the war. When the attrition of a three-front war came to bear on the Luftwaffe, the ground commanders of the eastern front found themselves controlling the majority of Germany's ground forces but much less than half of Germany's air forces.

Consequently, the missions of strategic bombing, deep interdiction, and Battlefield Air Interdiction were deemphasized in an attempt to provide the same amount of Close Air Support. This situation is dangerously close to that found in today's US Army doctrine. The experiences of the United States in recent wars indicates that firepower has become an almost overriding prerequisite on the battlefield. This was especially true in Viet Nam where an elusive enemy who could disappear into jungle and the local population frustrated the military to the point where air strikes were often indiscriminately used. Additionally, recent experience in the Yom Kippur War in 1973 showed that Israeli forces fought at a distinct numerical disadvantage and relied heavily on Close Air Support as we define it.

Today, in Central Europe, the countries of NATO face a situation which is not markedly dissimilar to that faced by Germany in 1943. The Soviet Union and other Warsaw Pact forces will rely heavily on mobile second and follow-on echelons to exploit penetrations and weakpoints in the front. The obvious trap into which tactical planners can fall is to tie the conduct of the air war to the fortunes of maneuver units in contact with the enemy. This does not mean that

Close Air Support should lose its place on the modern battlefield. On the contrary, it will be more important than ever in light of the lethality of weapons which modern forces employ. While the adage "What can be seen can be hit and what can be hit can be killed" is somewhat overstated, the fact remains that airborne systems used in close conjunction with advanced ground systems make the concept of Close Air Support that much more viable. Nevertheless, the great potential of such coordinated effort and the results which recent tests have shown are possible with the introduction of terminal-guided munitions, advanced gun systems, and all-weather delivery systems do not detract from the basic fact that a column of tanks on a road march makes a much better air-to-ground target than the same column deployed for battle along a woodline. In the same context an ammunition dump to the enemy's rear can be attacked with less risk than an attack on the same ammunition after it has been loaded onto T-80 tanks and is under the watchful protection of a battery of anti-aircraft guns along the front. This was a lesson that the Germans learned with disastrous results at Kursk. The bulk of the Luftwaffe losses during the Battle of Kursk were predominantly due to ground defenses during Close Air Support missions.<sup>8</sup> The Soviets were expert at using all means available to put up a formidable air defense screen along the front lines, down to the individual rifleman lying on his back and firing his weapon into the air.

The equipment of Warsaw Pact armies indicates that this affinity for air defense has not subsided. Air planners must pay close attention to such factors which have not been prevalent in

recent conflicts, at least not those in which the United States has been involved. The successes which the Luftwaffe enjoyed during the Battle of Kursk occurred where advantage was taken of its inherent flexibility and the ability to concentrate airpower at decisive points. Unfortunately for Germany, the decision to engage in offensive action at the time, in retrospect, was wrong. This primarily accounts for the overall outcome of the Battle of Kursk. But, in those cases where airpower was correctly employed, such as in the pre-operation interdiction campaigns and the Battlefield Air Interdiction missions carried out by the 4th Antitank Group against the counterattack of Soviet strategic reserves, it proved effective. Had Battlefield Air Interdiction been carried out more extensively as Luftwaffe doctrine stated, airpower might have played a decisive role in the outcome of the entire battle. Air planners are bound to relive the history of Kursk unless they are willing to accept the lessons learned from it.

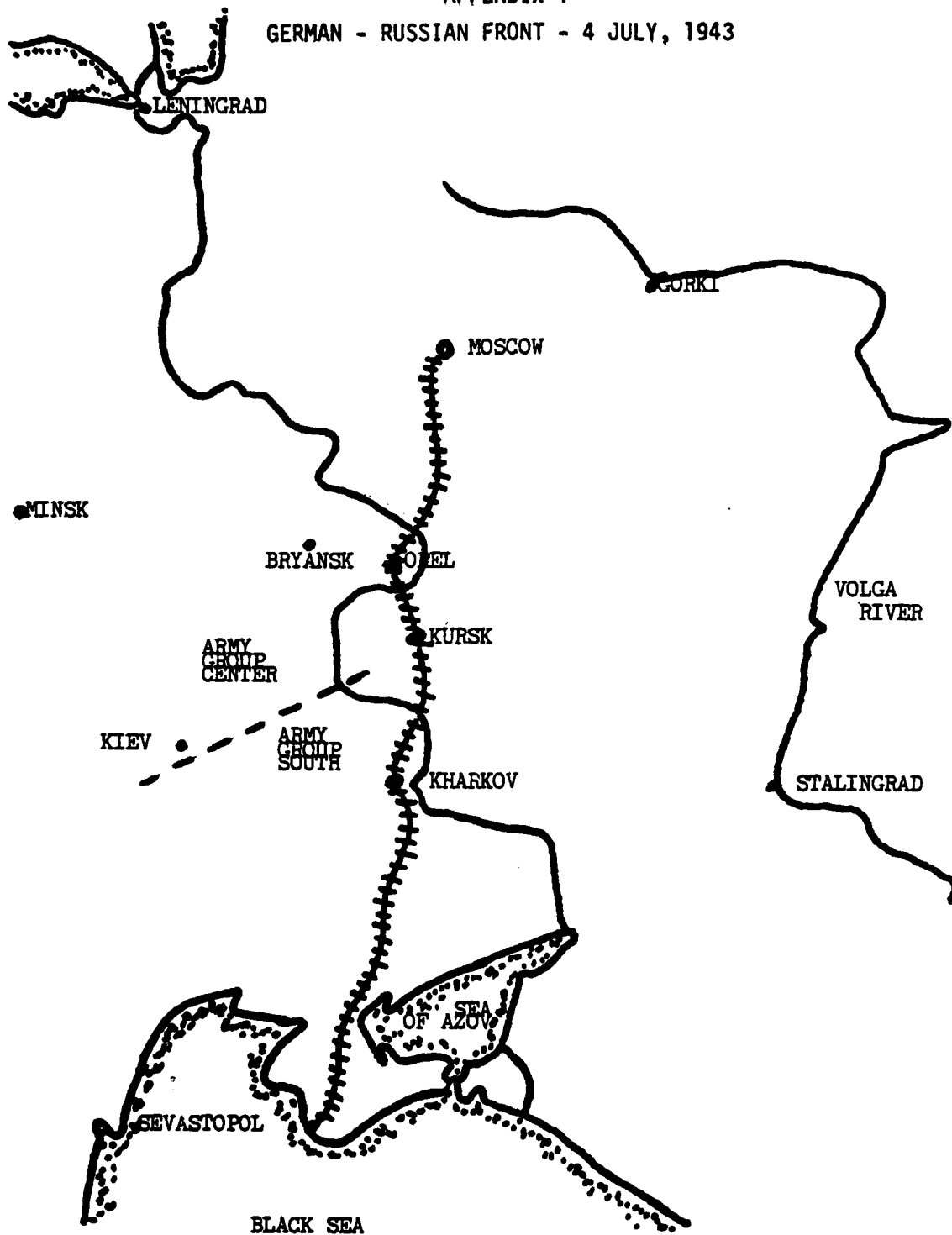
#### NOTES

1. Paul Deichmann, German Air Force Operations in Support of the Army, (New York: Arco, 1968), p. 170.
2. Hermann Plocher, The German Air Force Versus Russia, 1943, USAF Historical Series, No. 155, (Maxwell AFB, AL: USAF Historical Division, 1967), p. 229
3. Richard Suchenwirth, Historical Turning Points in the German Air Force War Effort, (New York: Arco, 1968), p. 108.
4. Department of the Army, Combined Arms Research Library, Ft Leavenworth, Document Division, "Interrogation of Reich Marshal Hermann Goering" 10 May 1945 at Augsburg, Germany, p. 9.
5. Department of the Army, Combined Arms Research Library, Ft Leavenworth, Document Division, "Military Intelligence Division, Report #B-792," 1 January 1945, p. 14.
6. Suchenwirth, p. 86.
7. Ibid.
8. William H. Tatum and E. J. Hoffschmidt, eds., The Rise and Fall of the German Air Force, 1933-1945, (Old Greenwich: WE, 1969) p. 236.

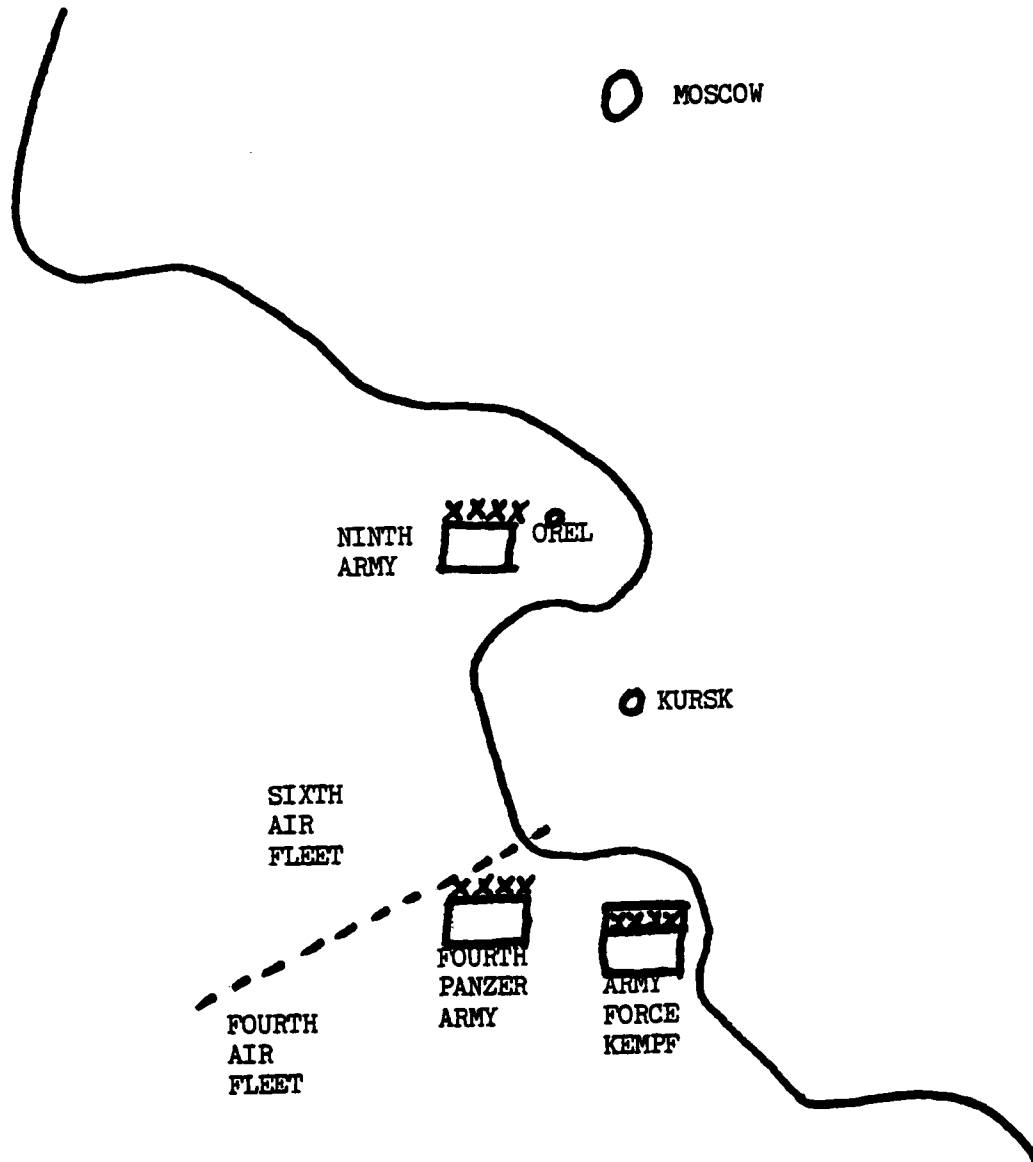


APPENDIX 1

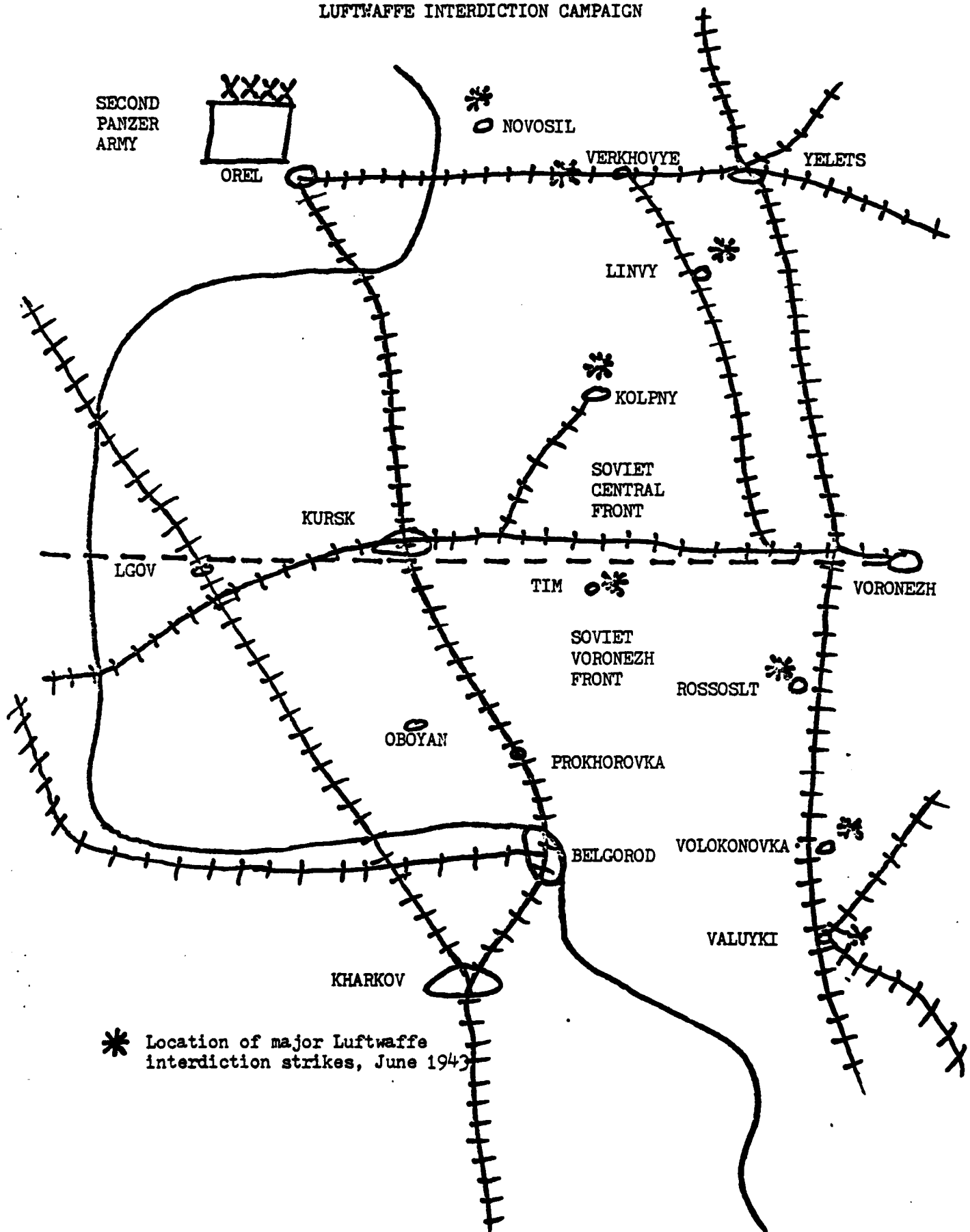
GERMAN - RUSSIAN FRONT - 4 JULY, 1943



APPENDIX 2  
KURSK AND OREL SALIENTS/AIR FLEET BOUNDARY



APPENDIX 3  
LUFTWAFFE INTERDICTION CAMPAIGN



APPENDIX 4  
FOURTH AIR FLEET AND SIXTH AIR FLEET  
AIR ORDER OF BATTLE - JULY 1943

SIXTH AIR FLEET

Fighters

- 51st Fighter Wing (3 1/3 FW-190 groups)
- 54th Fighter Wing (FW-190)
- 2 - 3 Anti-Tank Squadrons (Known as 14th Squadron)

Fighter Bombers

- 1st Dive Bomb Wing (3 Ju-87 Stuka groups)
- 1st Twin-Engine Wing (1 1/3 Me-110 groups)

Bombers

- 39th Group - 1st Bomber Wing (Ju-88)
- 4th Bomber Wing (2 He-111 groups)
- 51st Bomber Wing (2 Ju-88 groups)
- 53d Bomber Wing (2 He-111 groups)

FOURTH AIR FLEET

Fighters

- 4th Group - 9th Anti-tank Wing (4 HS-129 squadrons)

Fighter Bombers

- 1st Ground Attack Wing (2 FW-190 and 1 HS-129 groups)
- 2d Dive Bomber Wing ( 3 1/3 Ju-87 Stuka groups)
- 77th Dive Bomber Wing (3 Ju-87 Stuka groups)

## Bombers

3d Bomber Wing (2 Ju-88 groups)

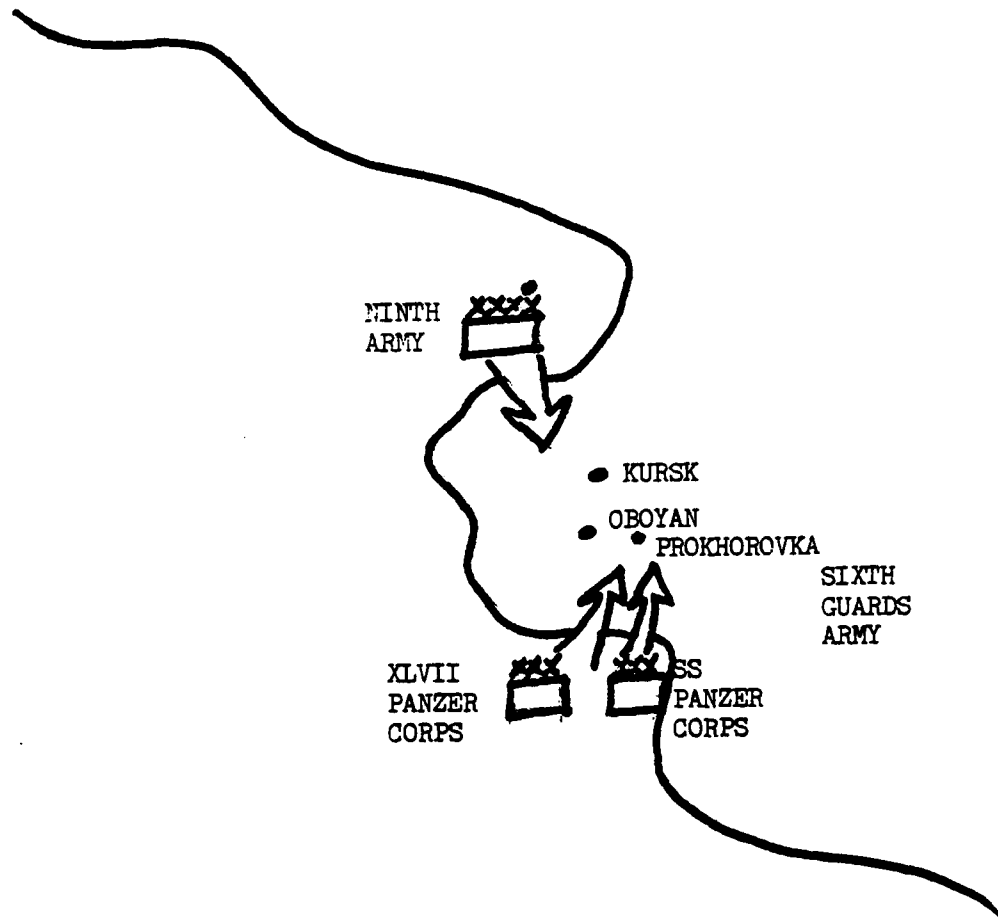
27th Bomber Wing (3 He-111 groups)

55th Bomber Wing (3 He-111 groups)

Source: Hermann Plocher, The German Air Force Versus Russia, 1943, USAF Historical Series, No. 155, (Maxwell AFB, AL: USAF Historical Division, 1967), pp. 76-78.

Note: Each Luftwaffe group consisted of from 30 to 36 aircraft. The group, though nominally part of a wing, often operated independently. A group was then further organized into squadrons of 9 to 12 aircraft.

APPENDIX 5  
GERMAN BREAKTHROUGHS



#### SELECTED BIBLIOGRAPHY

- Asher, Lee. The Soviet Air Force. New York: John Day Co., 1962.
- Berenbrok, Hans Dieter (Cajus Bekker). The Luftwaffe War Diaries. New York: Ballantine Books, 1964.
- Boyd, Alexander. The Soviet Air Force Since 1918. New York: Stein and Day, 1977.
- Carell, Paul. Scorched Earth. New York: Ballantine Books, 1966.
- Chant, Christopher. Kursk. London: Almark Ltd., 1975.
- Deichman, Paul. German Air Force Operations in Support of the Army. reprint ed., New York: Arco, 1968.
- Ehrhard, Robert C. "Some Thoughts on Air Force Doctrine, " Air University Review (March - April 1980): 29-38.
- Erickson, John. Road to Stalingrad. New York: Harper and Row, 1975.
- Horne, Alistair. To Lose a Battle, France 1940. Boston: Little, Brown and Co., 1969.
- Jackson, Robert. Air War Over France, 1939-1940. London: Ian Allan Ltd., 1974.
- Murray, Williamson, "British and German Air Doctrine Between the Wars." Air University Review, (March - April 1980): 39-58.
- Parotkin, Ivan, ed. The Battle of Kursk. Moscow: Progress Publishers, 1974.
- Plocher, Hermann. The German Air Force Versus Russia, 1943, USAF Historical Series No. 155. Maxwell AFB, AL: USAF Historical Division, 1967.
- Rudel, Hans. Stuka Pilot. New York: Ballantine Books, 1958.
- Shepherd, Christopher. German Aircraft of World War II. New York: Stein and Day, 1976.
- Soviet Historical Encyclopedia, Volume 8. 1965.
- Speer, Albert. Inside the Third Reich. New York: Macmillan, 1970.
- Suchenwirth, Richard. Historical Turning Points in the German Air Force War Effort. reprint ed., New York: Arno Press, 1968.

Tantum, William H. and Hoffschmidt, E. J., eds. The Rise and Fall of the German Air Force, 1933-1945. Old Greenwich: WE, Inc., 1969.

Thomas, Hugh. The Spanish Civil War. New York: Harper and Brothers, 1961.

Uebe, Klaus. Russian Reactions to German Airpower in WW II, USAF Historical Series No. 176. Maxwell AFB, AL: USAF Historical Division, 1964.

Von Mellenthin, F. W. Panzer Battles. University of Oklahoma Press, 1956; New York: Ballantine Books, 1976.

US Air Force. "Doctrine Information Publication No. 9." Washington D.C. (1 February 1980.)

US Army, Command and General Staff College, "Soviet Commander's Tactical Worksheet" Fort Leavenworth, KS, 1979.

US Army, European Military Intelligence Division, "Report #B-792, Interview with captured German Air Force colonel." (1 January 1945).

US Strategic Air Forces in Europe. "Interrogation of Reich Marshal Hermann Goering." Augsburg, Germany, 10 May 1945.

US War Department, Military Intelligence Division, Air Operations in the European War, no. 12. (1 August 1940).

US War Department, Military Intelligence Division, Tactics and Technical Trends, no. 2. (23 September 1943).

Zhukov, Georgi K. Marshal Zhukov's Greatest Battles. New York: Harper and Row, 1969.



# INITIAL DISTRIBUTION LIST

1. Library, U.S. Army Command and General Staff College  
Bell Hall  
Fort Leavenworth, Kansas 66027
2. Defense Documentation Center  
Cameron Station  
Alexandria, Virginia 22314
3. University Microfilms  
Ann Arbor, Michigan 48106

